

Ammonia Inhalation Fact Sheet

Federal government recommendations to protect human health via the inhalation exposure pathway for ammonia

The Occupational Safety and Health Administration's (OSHA) permissible exposure limit (PEL) is 50 ppm. The National Institute of Occupational Health and Safety (NIOSH) was set an acceptable ten-hour exposure limit at 25 parts of ammonia per one million parts of air (ppm) and a short-term exposure level (STEL) (15 minutes) at 35 ppm.

EPA's Acute Exposure Guideline Levels (AEGLs):

Ammonia (ppm)

	10 min	30 min	60 min	4 hr	8 hr
AEGL 1	30	30	30	30	30
AEGL 2	220	220	160	110	110
AEGL 3	2,700	1,600	1,100	550	390

AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. AEGL-1 and AEGL-2, and AEGL-3 values are distinguished by varying degrees of severity of toxic effects. The recommended exposure levels are applicable to the general population including infants and children, and other individuals who may be susceptible.

The three AEGLs have been defined as follows:

AEGL-1

Above this airborne concentration, expressed as parts per million or milligrams per cubic meter (ppm or mg/m³) the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and may go away soon and reversible upon stopping exposure.

AEGL-2

Above this airborne concentration (expressed as ppm or mg/m³) the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

AEGL-3

Above this airborne concentration (expressed as ppm or mg/m³) the general population, including susceptible individuals, could experience life-threatening health effects or death.

Airborne concentrations below the AEGL-1 represent exposure levels that can produce mild and progressively increasing but transient and nondisabling odor, taste, and sensory irritation or certain asymptomatic, nonsensory effects.

Although the AEGL values represent threshold levels for the general public, including susceptible subpopulations, such as infants, children, the elderly, persons with asthma, and those with other illnesses, individuals could experience the effects described at concentrations below the corresponding AEGL.

INTEGRATED RISK INFORMATION SYSTEM (IRIS)

The EPA IRIS has a chronic Reference Concentration (RfC) for ammonia of approximately 0.1 ppm based upon total uncertainty factors of 30 (an uncertainty factor of 10 for sensitive individuals and a factor of 3 for database deficiencies including the lack of chronic data). The chronic RfC allows for continuous exposure up to a lifetime.

MINIMUM RISK LEVELS (MRLs)

The Agency for Toxic Substances and Disease Registry (ATSDR) has inhalation MRLs for ammonia of 1.7 ppm and 0.1 ppm for acute and chronic exposures, respectively.